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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

LEE, HWA S

ART UNIT PAPER NUMBER

2877

DATE MAILED: 12/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 09/543,604 | Applicant(s) MUELLER ET AL. | |
| | Examiner Andrew H. Lee | Art Unit 2877 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 10-13, 16-19, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller (6,271,925) in view of Elssner et al. (DD 261422).

As for claims 1, 2, 6, 7, 11, 16, 17, and 18, Muller shows an apparatus and method for measuring two opposite surfaces of a body comprising:

- a light energy generating device (1);
- a collimator (7);
- a diffraction grating (8);
- a second diffraction grating (10);
- at least one receiving collimator (11);
- at least one camera (16).

Muller does not show the reflecting surface (reference surface). Elssner et al (Elssner hereinafter) show an interferometer for measuring surface smoothness of an object wherein a reference reflecting surface is used to reflect the other first order diffraction (-1 order diffraction). The use of the reference surface allows for better quality of measurements due to the use of combining a first order diffraction with another first order diffraction rather than combining a first order diffraction with a zero order diffraction where intensities of the two orders can be different. In addition, the recombining of beams originating from the same portion

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of the illumination beam remain constant thus removing errors due to inconsistencies of the original beam.

Therefore, at the time of the invention, one of ordinary skill in the art would have been motivated to modify Muller to use a reference reflecting surface of Elssner in order to obtain better surface measurements.

As for claims 4, 13, Muller shows the calibrating of the interferometer in column 3, lines 17+.

As for claims 5, 16, and 23 the image aspect ratio is altered by the grating and mirrors (12-14).

3. Claims 3, 10, 12, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller and Elssner as applied to claims 1, 2, 6, 7, 11, 17, and 18 above, and further in view Kulawiec et al (5,719,676). Muller and Elssner fail to expressly show the blocking of zero order light. Kulawiec et al (Kulawiec hereinafter) shows in Figure 7, the measurement of opposite sides of a body wherein zero order light is blocked (column 9, second paragraph). At the time of the invention, one of ordinary skill in the art would have modified Muller and Elssner to block zero order light in order to obtain clearer measurements by blocking zero order light from interfering with combined beam that contains measurement information.

4. Claims 8, 9, 14, 15, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller and Elssner as applied to claims 1, 2, 6, 7, 11, 17, and 18 above, and further in view of in view of Ai et al. (5,471,303).

Muller and Elssner fail to expressly show an interferometric normal incidence inspection device. Ai shows a combination of two interferometers for surface profile measurement in a single apparatus comprising a light emitting device (34 or 36), a beamsplitter (24), a collimator (lens in 14), and a semitransparent reflecting mirror (24). Ai et al suggest the use of a second normal incident interferometer to improve the accuracy of height measurements made by a first normal incident interferometer. At the time of the invention, one of ordinary skill in the art would have used a second interferometer in order to improve the measurements of the first interferometer since the second interferometer provides a redundant measurement or the second interferometer has better a range of height measurements or improved accuracy.

Response to Arguments

5. Applicant's arguments filed 8/27/03 have been fully considered but they are not persuasive.

6. In response to applicant's argument that a hologram is not a diffractive grating, the Examiner respectfully disagrees. If an object is illuminated by a coherent light, it will give rise to a set of reflected or transmitted spherical waves. Since the illumination is coherent, each of these waves are mutually coherent, and hence will produce a diffraction pattern. Furthermore, the Examiner was not looking to Elssner for the teaching of the diffraction grating since Muller teaches the diffraction grating. The Examiner was looking to Elssner for the teaching of the use of a reference surface in a grazing incidence interferometer.

7. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., Elssner does not show inspecting both sides of a specimen) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

8. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, a reference surface for comparing the reference surface to a sample surface is knowledge generally available to one of ordinary skill in the art.

9. In response to applicant's argument that Muller and Elssner can not be combined, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

10. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on

obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center numbers are 703-872-9306 for regular communications and for After Final communications

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

- a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and
- b) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa Lee whose telephone number is (703) 305-0538.

The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703-308-4881.



Andrew Lee
Patent Examiner
Art Unit 2877



Frank G. Font
Supervisory Patent Examiner
Technology Center 2800

December 10, 2003/ahl